

PATENT SPECIFICATION

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(19)



(54) LIQUID CLEANING COMPOSITIONS

- (71) We, UNILEVER LIMITED, a company organised under the laws of Great Britain, of Unilever House, Blackfriars, London E.C.4, England, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—
- The invention relates to liquid cleaning compositions, and particularly to aqueous compositions adapted for cleaning hard surfaces, such as floor and the like.
- According to the present invention, it has been found that the presence of water-soluble or water-dispersible polysaccharide hydrocolloids decreases the foaming properties of aqueous hard-surface cleaning compositions which also incorporate a surface active agent, an alkaline inorganic salt and a hydrotrope.
- This is particularly advantageous as it is desirable to inhibit the formation of foam during the use of such compositions so as to facilitate rinsing or even avoid it altogether, and because foam can sometimes detract from the appearance of cleaned surfaces after they have dried. Moreover, the use of the polysaccharide hydrocolloids can give economic benefit by enabling the complete or partial replacement of more expensive foam retarding agents such as silicones.
- Additionally, many of the polysaccharide hydrocolloids give useful thickening effects to the liquid cleaning compositions, even when used at the low concentrations which are found to give a satisfactory lather depressant effect. The thickening of the composition tends to facilitate their use.
- The polysaccharide hydrocolloids are preferably prepared from naturally occurring gums selected to be stable in the cleaning compositions, i.e. compatible with the other ingredients present. If desired, the natural polysaccharide hydrocolloids may be chemically modified to make them more or less water soluble or stable in the presence of the other ingredients in the compositions, for example they may be partially acetylated. We have found that a particularly effective polysaccharide hydrocolloid is partially acetylated xanthan gum, a material of which type may be obtained under the Trade Name "Kelzan" from Kelco Company of New Jersey, USA. Examples of other suitable commercially available polysaccharide hydrocolloids are Gum XG-492, a modified tragacanth gum supplied by Tragasol Products Ltd., Rein Guarin, a pure guar gum, and Meyhall LK10, an ethoxylated guar gum, both supplied by Meyhall Chemicals A.G. The amount of polysaccharide hydrocolloids used is generally about 0.05 to 0.5% by weight of the compositions.
- The invention is particularly intended for the improvement of floor cleaning compositions, which may or may not be diluted with water on use, but do not require much, if any, rinsing after use. Such compositions are generally aqueous solutions of surface active agents, alkaline inorganic salts and hydrotropes with optional additives such as, colourants, perfumes, sequestrants and preservatives, for example formaldehyde. The surface active agents may be anionic, cationic, nonionic, or amphoteric compounds and may be used singly or in mixtures. Suitable surface active agents are well known and are commercially available, see for example "Surface active agents and detergents" Volumes 1 and 2 by Schwartz, Perry and Berch. The usual inorganic salts include, for example, sodium and potassium carbonates, bicarbonates and orthophosphates. Sodium xylene sulphonate and lower aliphatic alcohols, for example ethanol are commonly used as hydrotropes. The usual sequestrants for hard-water cations are sodium ethylene diamine tetraacetate (EDTA), sodium nitrilotriacetate (NTA), pyrophosphates and tripolyphosphates, though the latter can cause precipitation of some polysaccharide hydrocolloids.
- The preferred floor cleaning composition according to the invention essentially incorporates:
- (a) from 0.5 to 10%, preferably from 1 to 5% by weight of a surface active agent,

- (b) from 3 to 15% by weight of at least one alkaline inorganic salt,
 (c) from 0.5 to 5% by weight of at least one hydrotrope,
 5 (d) from 0.05 to 0.5% by weight of a polysaccharide hydrocolloid, and
 (e) water.

The pH of the composition is preferably within the range of from 9 to 10.0, which is achieved by the use of suitable alkaline inorganic salts, for example a mixture of sodium carbonate and sodium bicarbonate in roughly equal proportions, with added sodium triphosphate. The preferred surface active agent is a mixture of anionic and amphoteric compounds in roughly similar proportions, as this gives good wetting and cleaning properties without excessive lathering.

The invention is illustrated by the following Examples in which parts and percentages are by weight.

Example 1

A liquid detergent composition was made to the following formulation by addition of the ingredients to water with stirring:

	Ingredient	Percentage
	Sodium C ₁₂ -alkyl sulphate	1
	Sodium salt of a carboxylated alkyl imidazoline	0.4
30	Sodium xylene sulphonate	1
	Sodium carbonate (anhydrous)	5.5
	Sodium bicarbonate	4.5
	Sodium tripolyphosphate	2
35	Industrial methylated spirits (IMS)	0.5
	Perfume, colourants and preservatives	0.315
	Silicone polyether copolymer	0.1
	Kelzan ¹	0.1
40	Water	to 100

¹A partially acetylated xanthan gum obtained from Kelco Company.

This composition had a viscosity of 13 centipoises (cps), as determined by an Ostwald viscometer, and was found to have excellent low lather characteristics when used for floor cleaning.

Example 2

A composition was prepared as described in Example 1 but the amount of the ingredient "Kelzan" was increased to 0.15%. The viscosity of the product was increased to 26 cps and the product again had excellent low lather properties in use.

By way of comparison a further composition was prepared which incorporated no "Kelzan" but in which the silicone polyether copolymer was increased to 0.3%. This formulation had satisfactory low lather characteristics but was much more expensive

than the compositions of Examples 1 and 2 and had a viscosity of only 2 cps.

Example 3

A composition was prepared as described in Example 1, with the exceptions that the silicone copolymer was not used whilst the amount of the ingredient "Kelzan" was increased to 0.5% and the level of IMS was increased to 3%, the latter to compensate for the tendency of the composition to gel due to the high "Kelzan" level. The composition was found to have excellent low lather characteristics when used for floor cleaning.

Examples 4 to 6

Three compositions were prepared as described in Example 1 except that the silicon polyether copolymer and the sodium tripolyphosphate were omitted and the Kelzan was replaced by 0.1% of other gums as follows:

Example	Gum
4	Gum XG 492
5	Rein Guarin
6	Meyhall LK10

the particulars and suppliers of which are described above. Each of these compositions had good low lather characteristics when used for cleaning, the composition of Example 5 being particularly good in this respect and requiring no rinsing to give a foam-free surface. The compositions had viscosities of 4.6, 5.0 and 3.2 cps, as measured in an Ostwald viscometer, whereas the composition without the lather depressants had a viscosity of only 1.9 cps.

WHAT WE CLAIM IS:—

1. An aqueous hard-surface cleaning composition incorporating a surface active agent, an alkaline inorganic salt, a hydrotrope and a compatible water-soluble or water-dispersible polysaccharide hydrocolloid.

2. A composition according to claim 1 comprising from about 0.05 to 0.5% by weight of the polysaccharide hydrocolloid.

3. A composition according to claim 1 or claim 2 wherein the polysaccharide hydrocolloid is prepared from a naturally occurring gum.

4. A composition according to claim 3 wherein the polysaccharide hydrocolloid is prepared from xanthan gum, tragacanth gum or guar gum.

5. A composition according to claim 4 wherein the polysaccharide hydrocolloid is a partially acetylated xanthan gum.

6. A composition according to any of the preceding claims comprising from 0.5 to 10% by weight of a surface active agent, from 3 to 15% by weight of at least one alkaline

inorganic salt, from 0.5% to 5% by weight of at least one hydrotrope, from 0.05 to 0.5% by weight of a polysaccharide hydrocolloid and water. stantially as described herein with reference to any of the foregoing Examples.

5 7. A composition according to claim 1 sub-

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